Winter 2016

the Periodical Winter 2016

Southern Adventist University

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Winter 2016

the Periodical

Southern Adventist University Chemistry Department

Chemistry Club students enjoy community service, socializing

By Melanie Roman

Community and service have been a focus for the chemistry club at Southern Adventist University during the winter semester.

The chemistry club opened the semester by participating in Community Service Day with the biology department. On Jan. 21, the clubs braved the cold weather to help the owners of Red Clay Farm with preliminary work to prepare for spring, from weeding in the tunnels to preparing seedlings.

The chemistry club also hosted the annual puzzle-building community service event on Feb. 20. Students built puzzles to ensure all the pieces were present. This event assists the Samaritan Center in making complete puzzles available to the public. Students eagerly signed up and had a good time fellowshipping and building puzzles on a pleasant Sabbath afternoon.

Vespers, a chemistry club favorite, was held on April 1. The turnout was large with about 50 students in attendance. Students enjoyed food and relaxation as they welcomed the Sabbath.

See CLUB, page 4

Megan Jewell, Biology Club president, prepares soil for future gardening at Red Clay Farm in Cleveland, Tenn., during Community Service Day on Jan. 21.

Plenty of pedigree

Brent Hamstra

My recent trip to the American Chemical Society National Meeting in San Diego has prompted me to think about the concept of pedigree. I attended to honor the professor I did my doctoral research with as he received a major award for his contributions to inorganic chemistry. While there, I heard him speak about his research, and I heard a couple talks by the professor under whose direction he did his doctoral research—a man who has also received multiple awards for his contributions to inorganic chemistry. As I trace my academic family tree back across the centuries — which is easier than you might think with various websites devoted to compiling this type of information — I realize that I am blessed to be a scientist with an outstanding scientific pedigree.

I also realize that with that blessing comes the responsibility to maintain the honor of my "family" and to continue the tradition of excellence in scholarship established by those who passed their knowledge on to me. My position at Southern Adventist University doesn't currently allow me the time or resources to make impressive new discoveries in the laboratory, but I do have the opportunity to lead students to a greater understanding of chemistry in the classroom and to give them the foundation they need to become outstanding scientists and medical professionals in their fields. I am honored to work with colleagues who share their own time and energy in working toward the same goal. Because of our investment of time and effort, our department is blessed to have established an outstanding educational pedigree.

I also have the opportunity and responsibility to lead my Southern students toward spiritual excellence. We provide value in our chemistry education that the vast majority of colleges and universities are unwilling or unable to supply. Attending Southern may require a greater financial cost to students to obtain an education, but the benefits far outweigh that cost. Perhaps the most critical piece of value we add is in giving our students a firm understanding that they are the sons and daughters of God. Because of this, when they read to the end of the third chapter of the Gospel of Luke, they should realize that they are blessed to have an outstanding spiritual pedigree.

Emily Hamstra, BA 2003, former forensic drug chemist and crime scene investigator works with the Bradley County Sheriff's Office.

Summer camp offers insight into forensics

The Chemistry Department at Southern Adventist University is offering a three-day/two-night summer camp from July 25 to 27. Jan Cathey and Emily Hamstra will serve as lead instructors for the camp, which will provide high school students the opportunity to explore chemical techniques relevant to crime solving.

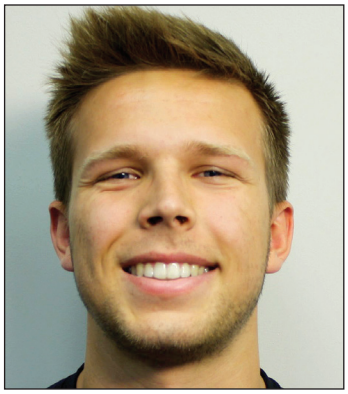
Students will use modern chemical analytical techniques such as gas chromatography-mass spectrometry (GC-MS), atomic absorption spectroscopy (AAS) and ultra-violet visible spectroscopy (UV-Vis) as part of their investigations.

See CAMP, page 8

May 2016 graduates

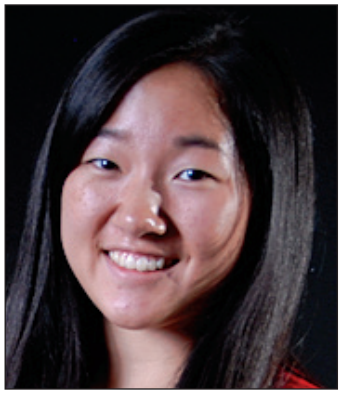
Chris Andrade
B.S. Chemistry
Biochemistry Emphasis

Future plans: Attend graduate school, get Ph.D.



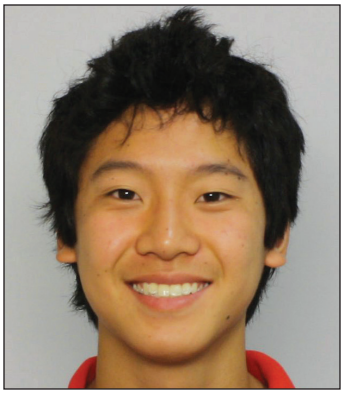
Brad Beisiegel
B.S. Chemistry,
Biochemistry Emphasis

Future plans: Attend Loma Linda School of Dentistry



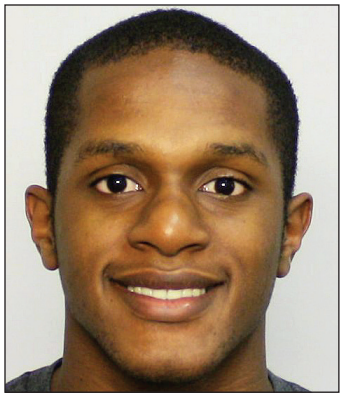
Ellen Chun
B.A. Chemistry

Future plans: Attend Loma Linda University School of Dentistry



Michael Chung
B.A. Chemistry

Future plans: Attend Loma Linda University medical school



Jeron Estwick
B.S. Chemistry

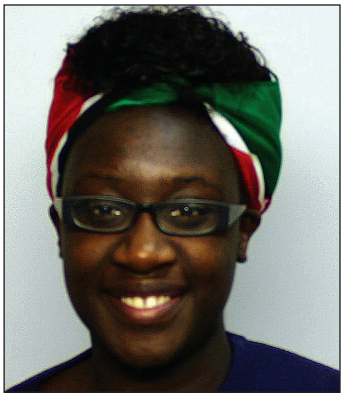
Future plans: Attend graduate school

Andy Hausted
B.A. Chemistry

Future plans: Work at the National Cancer Institute, attend LLU medical school

Christopher Marshall
B.A. Chemistry

Future plans: Attend University of Tennessee (Memphis) dental school

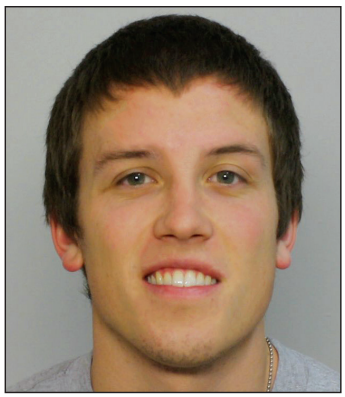


Sharon Njalaleh
B.S. Chemistry

Future plans: Work at medical facility at John Hopkins University

Denise Pleytez
B.A. Chemistry

Future plans: Attend School of Pharmacy at Loma Linda University



Jeremy Rogers
B.A. Chemistry

Future plans: Work in an educational or laboratory setting

Keep in touch with the chemistry department!

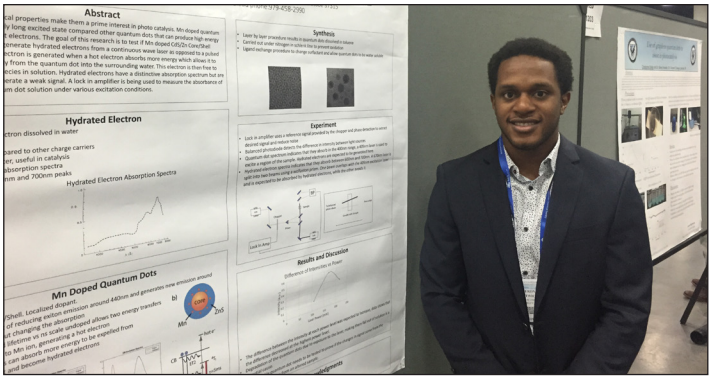
Read The Periodical (department newsletter):
southern.edu/chemistry

Find us on Facebook:
facebook.com/chemistryatsouthern

Email us:
chemistry@southern.edu

Student presents research at annual chemistry conference

Chemistry Department Chair Brent Hamstra and senior chemistry major Jeron Estwick attended the 251st American Chemical Society (ACS) Meeting & Exposition, held in San Diego, Calif., from March 13 to 17. Hamstra attended a symposium honoring Professor Vincent Pecoraro, under whose direction he conducted his doctoral research. Professor Pecoraro received the ACS Award for Distinguished Service in the Advancement of Inorganic Chemistry. While there, Hamstra reconnected with several graduate students and post-doctoral researchers he worked with during his studies at the University of Michigan.



Senior chemistry major Jeron Estwick presents his research during the American Chemical Society Meeting and Exposition in San Diego, Calif.

Estwick presented the research he conducted during the summer of 2015 as part of the Research Experience for Undergraduates (REU) Program at Texas A&M University. His poster, "Generating hydrated electrons from Mn-doped quantum dots," highlighted his studies into the possibility of generating hydrated electrons in solution upon the photoexcitation of CdS and ZnS nanoparticles containing low levels of manganese.

While there, Hamstra and Estwick met with Chemistry Department graduate Emily Moses (2015), who was in San Diego to present a poster describing research she conducted during her first year of graduate school at the University of California-Riverside. Moses' research explored the phosphorescent behavior of thallium-doped pyrene nanocrystals in aqueous solution.

The research experiences presented by these two students at one of chemistry's most important meetings demonstrated again that Southern students receive the knowledge and skills needed to conduct successful research at the undergraduate level and are well prepared for graduate study in chemistry. The Chemistry Department looks forward to additional accomplishments by these students, other students currently studying at Southern and alumni who have completed or are currently pursuing graduate study in chemistry.

Chemistry professors Bruce Schilling and Rhonda Scott work on a puzzle during the Chemistry Club event.

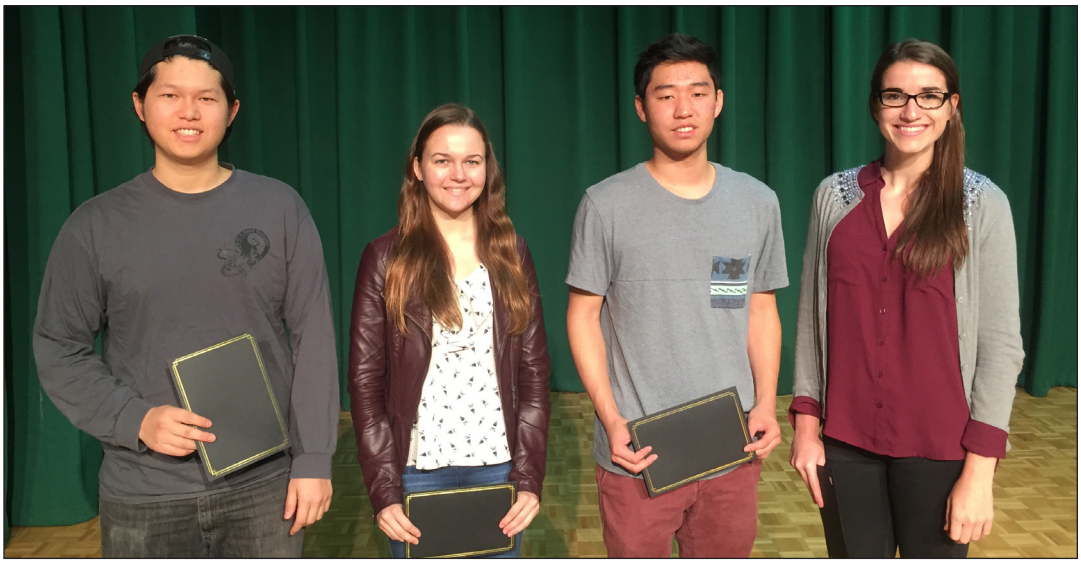
Club

Continued from page 1

Mingling was interrupted when professor Bruce Schilling offered his famous homemade ice cream to the students. The night was closed with a worship thought by Chemistry Club pastor, Brandon Williams. Students reflected together on the meaning of science and ministry.

Chemistry Club strives to participate in events that help the community and also build community during these events.

Chun among students recognized for their academic performance



The Chemistry Department has recognized several chemistry majors for their academic performance and contributions to the department.

Ellen Chun is the 2016 Outstanding Senior in Chemistry. Ellen has been an excellent student and has worked for the Chemistry Department as a grader and laboratory assistant.

Ellen plans to attend the Loma Linda University School of Dentistry in the fall.

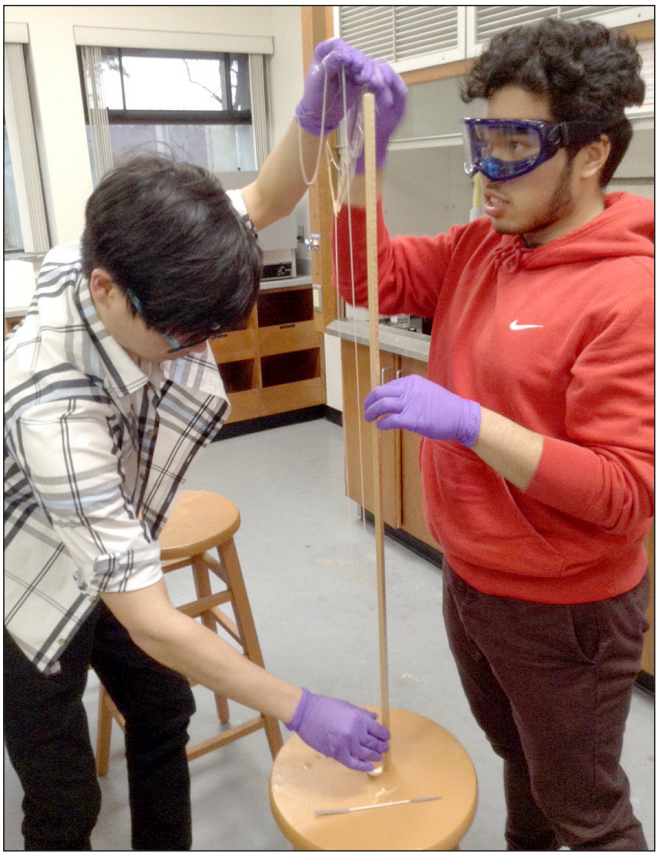
Micah Chaiprakorb, Zubin Chang, Olivia Londis and Megan Schlinsog were named as Top Achievers by the Chemistry Department at the Awards Convocation on April 14.

Each of these students will receive a $500 scholarship in recognition of their academic performance in chemistry. Zubin was a junior, Micah and Olivia were sophomores, and Megan completed her first year at Southern.

The Chemistry Department congratulates each of these students for their accomplishments and thanks the donors who help in funding the educational programs and scholarships for our students.

Top, from left, Micah Chaiprakorb, Megan Schlinsog, Zubin Chang and Olivia Londis were named as Top Achievers by the Chemistry Department at the Awards Convocation on April 14. Above, Ellen Chun was named the 2016 Outstanding Senior in Chemistry.

Nylon Challenge winners



Ethan Park and Christopher Celis won the 2016 Nylon Challenge. By using only 10 mL of 5 percent hexamethylenediamine, 10 drops of 20 percent NaOH, and 10 mL of 5 percent adipoyl chloride, the students pulled a 19.35 m long string of Nylon-6,6 in one try. Congratulations to our student winners!

BIBLICAL APPLICATION

Salt of the Earth

By Herman Odens

As a chemist, I am always amazed to know that Jesus used a chemical compound to make an analogy on how Christians should live a righteous life and love one another. "You are the salt of the earth. But if the salt loses its saltiness, how can it be made salty again? It is no longer good for anything, except to be thrown out and trampled underfoot." (Matt. 5:13, NIV)

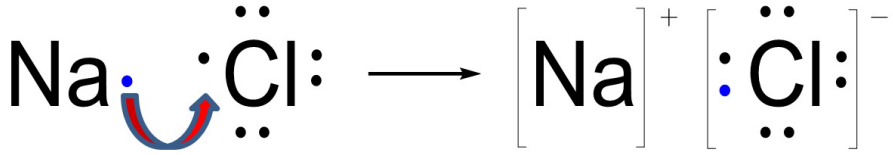
Jesus uses sodium chloride (NaCl), one of the most stable compounds in nature. Virtually no natural reaction can cause salt to turn into any other compound. However, how can salt lose it saltiness? There are two ways that salt can be tasteless. One mean is dilution. As water overwhelms the concentration of salt in a vessel, the water solution loses its salty flavor. In spiritual terms, this dilution could represent how faith and our dependency for the Lord gets weaker by the worries that the world brings to our everyday lives. The second method that can cause salt to become tasteless is by electrolysis in which the atoms of sodium and chlorine are separated suddenly by a direct electrical current. Perhaps due to an unfortunate event in life, people can lose any hope and faith in God also.

Because we are negative, selfish, and sinful, humans are like the chloride ion. The chlorine atom needs an electron to complete an octet in its electronic configuration. God is the positive side in our lives, therefore God is like the sodium ion that has given its electron to enable us to become a NaCl unit. Several units of NaCl combine to make a crystal lattice which is organized, connected, and strong.

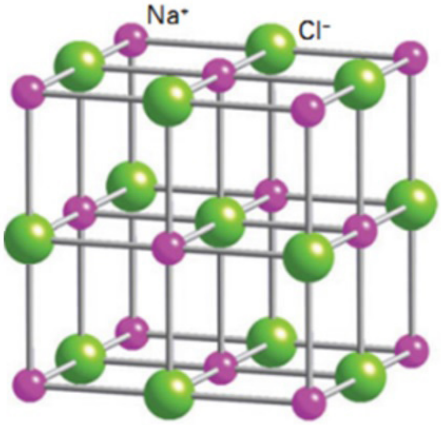
The lattice is like Christ's church and demonstrates the love of Christ in us to others. As the Lord fills a void in our hearts, He completes us, like filling an orbital.

Are you ready to receive God's electron today?

How is salt formed?



Above, the electron is transferred from the sodium to the chlorine atom, and the chlorine accepts the electron from sodium and both become ionized. At right, the crystal lattice of table salt.



ALUMNI SPOTLIGHT

Matthew Littell, M.S.

1. What years did you attend Southern Adventist University?

I started in 2009 and graduated in May 2013.

2. What attracted you to Southern?

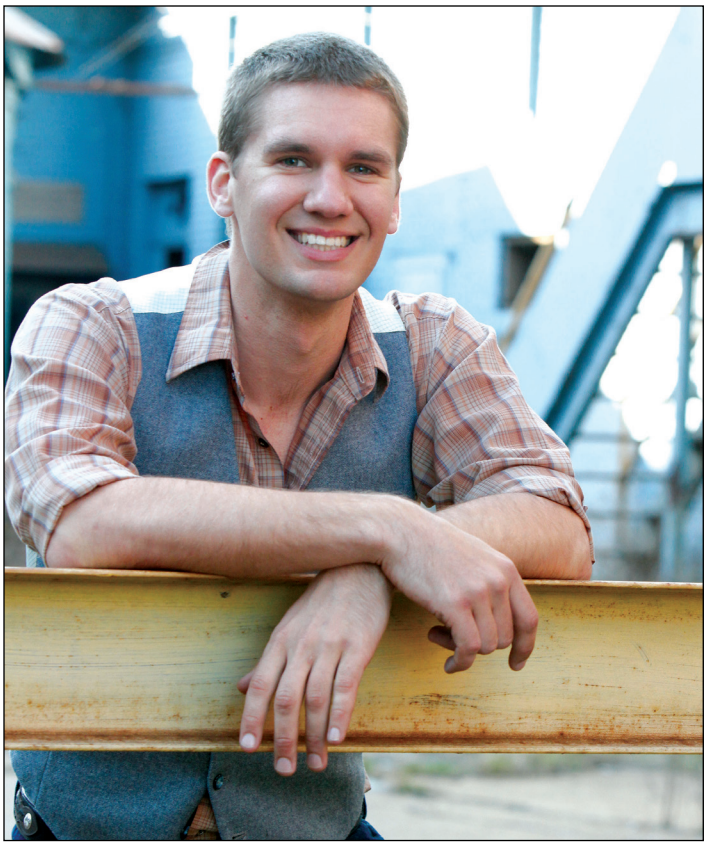
My family has attended Southern and they spoke highly of the school and the programs. I liked that atmosphere, the good people, and the Christ-centeredness of the entire school.

3. Why did you choose to study chemistry?

I have always been interested in science. I always liked to conduct experiments, and when I took chemistry in high school, it was interesting. I wanted to focus on chemistry for my higher education. I decided to get my Masters of Engineering in Chemical Sciences and the bachelor's of chemistry degree was invaluable.

4. Describe your experience at Southern. What is your favorite memory at Southern?

The experience at Southern was fulfilling—from my social life and scholastics to physical activities and spiritual life. One memory is being on Gym-Masters and the traveling and bonding with the teammates and doing the church services for wherever we were. It was always rewarding!



Chemistry department graduate Matthew Littell is a process engineer at Wacker Chemical in Charleston, Tenn.

5. Where was your favorite place to study?

My favorite place to study was in the conference room on the third floor of Hickman Hall. It was big enough to talk and discuss ideas. It was secluded enough so that you wouldn't be distracted by people walking by or people talking too loud.

6. What was your favorite class?

My favorite class was physical chemistry. This class helped put all the math and theory classes together and applied them to the real world.

7. Tell us about your life immediately after Southern.

After Southern, I decided to continue my education and get my Masters of Engineering in Chemical Sciences. This really helped to open the job opportunities for me.

8. What are your plans for the near future?

I am working as a Process Engineer at Wacker Chemical in Charleston, Tenn. I plan to further my career there and possibly get a Master's in Business Administration soon.

9. What advice do you have for current students who want to make the most of their time at Southern?

To have a good balance between studies and personal life. To get the most out of your time at Southern, both studies and the friends you make are important.

SOUTHERN
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Power for Mind & Soul

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Rhonda Scott, Ph.D.
Heidi E. Olson, Office Manager

Camp

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The inquiries will expose students to many areas of chemistry such as explosives, water quality, biomedical analysis (mitochondrial DNA testing), organic spectroscopy, and fluorescence (latent fingerprint analysis).

This experience is designed to build on a high school chemistry foundation and provide content enrichment, which will broaden the understanding of foundational chemistry concepts with practical applications.

Emily Hamstra, former forensic investigator, dusts a vehicle for fingerprints.

The chemistry faculty recommend that students have completed a course in chemistry and are interested in pursuing a science-related field.

The cost is $100, which includes all instruction, meals, and recreation ($150 if requiring overnight accommodations).

Interested participants can sign up at www.southern.edu/camps.